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Albania

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Contents

1 Introduction

This country report is produced by the "Information Office of the Steering Platform on Research for Western Balkan Countries" and reviews the situation in Science and Technology (S&T) in Albania.
The report summarises the main papers published by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the South-East European ERA-NET (SEE-ERA.NET), the Austrian "Gesellschaft zur Förderung der Forschung", and several independent scholars on the issue of S&T in Albania. For the complete table of references please References in chapter 7, starting on page 26 of this report.

The objective of this study is to enhance our understanding of the national innovation system in Albania. An overview of the situation in S&T regarding the main stakeholders, input and output indicators, the national strategies and priorities, and the main documents and laws in the field is given below.

The 'system of innovation' approach was taken into account when compiling this report, and it covers important factors influencing the development, diffusion and the use of innovations, as well as the relations between these factors. It does not place emphasis on individual firms or research organisations, but rather on innovation as an interactive and interdependent process.
Relevant organisations in this respect are firms, higher education institutions, government agencies, etc. interacting to create knowledge and innovation. The macro-level of the system is analysed using indicators such as R&D personnel ratios, R&D expenditure, patent application intensity rates, etc.

The report was compiled in autumn 2006 by the Information Office and reviewed by the following actors:
Mr. Peter Mayr, Centre for Social Innovation, Vienna, Austria
Mr. Edmond Agolli, Ministry of Education and Science, Albania

1.1 Albania – A Brief Profile

The 1992 elections in Albania ended 47 years of communist rule under Enver Hoxa, although the latter half of the decade saw a quick turnover of presidents and prime ministers. The transition has proven difficult as successive governments have tried to deal with high unemployment, widespread corruption, a dilapidated infrastructure, powerful organised crime networks and a disruptive political environment. Although the country has made progress in its democratic development since 1991, deficiencies still remain. During the NATO bombing of Yugoslavia in 1999, nearly 500,000 ethnic Albanian refugees from Kosovo spilled over the border, imposing a huge burden on Albania's already fragile economy. Despite continuous economic growth, the country remains one of the poorest in Europe, hampered by a large informal economy and an inadequate energy and transportation infrastructure (European Commission 2006a).

The Republic of Albania is a South Eastern European country with a population of 3.2 million inhabitants (44 % urban and 56 % rural). The administrative division of the country consists of 12 prefectures, 36 districts and 374 communes/municipalities. In 1998, a new constitution was adopted to replace the interim constitution of 1991. The new constitution conforms to international democratic standards and guarantees democratic freedom, notably political pluralism, freedom of expression and religion. Albania is a parliamentary republic and the last parliamentary elections took place in July-August 2005 (the next elections are scheduled for mid-2009). Overall, the parliament functions satisfactorily, although political life in Albania continues to be turbulent. In terms of foreign relations, Albania has played a positive and constructive role in regional issues, particularly regarding Kosovo, southern Serbia, the Former Yugoslav Republic Of Macedonia (FYROM) and Montenegro. Albania participates actively in several regional cooperation activities and is also a party to most international human rights treaties. In 2000, the country abolished the death penalty in peacetime (European Commission 2006a).

Albania lags significantly behind its Balkan neighbours in the transition towards a modern, open-market economy. Agriculture, which accounts for about one quarter of GDP, is held back because of frequent drought, the need to modernise equipment, clarify property rights etc. Furthermore, energy shortages and inadequate infrastructure contribute to Albania's poor business environment, making it difficult to attract and sustain foreign investment (CIA 2006).

In 2003, the nominal GDP of Albania reached EUR 5.4 billion (about EUR 1,680 per capita) and 25 % of the population were living below the country-specific poverty level. However, Albania's cumulative growth has reached an annual average of 6.3 % due to the implementation of largely successful stabilisation programmes, structural transformation and remittances sent home by migrants. Agriculture has declined to 25 % of GDP, industry and construction account for 20 %, while the contribution of the service sector to GDP has risen to 55 %. The economic situation was exacerbated by the continued weak export performance, which has resulted in a persistent external deficit. The privatisation of SMEs has been completed, but political uncertainty and the low level of interest from strategic investors have delayed large scale privatisation. Regarding the macroeconomic situation, 2004 tax revenues were projected to increase to 20.2 % of GDP, but they remain the lowest in the region. However, on a more positive note, the absence of substantial inflationary pressure and the continuing nominal appreciation of the Lek (Albanian national currency) presented the opportunity for the relaxation of monetary policy (European Commission 2006a).

1.2 Relations between Albania and the EU

Albania participates in the Stabilisation and Association Process (SAP) along with other countries of the Western Balkans. In 2005, the European Council adopted a revised European Partnership for Albania, identifying short and medium term priorities which the country should address. The partnership also serves as a checklist against which to measure progress, as well as providing guidance for EC assistance. The EC priorities reflect Albania's stage of development and are

tailored to its specific needs. Albania is expected to respond to the European Partnership by producing a "National Action Plan" with a timetable and details of how it intends to address the European Partnership's priorities. Progress in implementing these priorities is monitored regularly by the European Commission, notably through the annual Progress Reports and through other structures set up under the SAP, in particular the Consultative Task Force (European Commission 2006a).

The signing of the Stabilisation and Association Agreement (SAA) in Luxemburg on June 12, 2006 is considered a milestone on Albania's path towards EU membership. It outlines a set of political and economic criteria that the government is expected to meet. The deal also clears the way for greater trade liberalisation and a more competitive market that will both challenge Albanian business and present new opportunities. Ratification of the SAA is expected to take about two years – eventually replacing the 1992 Trade, Commercial and Economic Cooperation and Interim agreements. The implementation of the SAA will also require Albania to progressively liberalise its market over a maximum period of 10 years (European Commission 2006a).

Albania has benefited from national and regional financial assistance under the Community Assistance for Reconstruction, Development and Stabilisation (CARDS) programme and a far-reaching contractual relationship with the EU, including trade preferences through the Stabilisation and Association Agreement. Regional dialogue and cooperation are also important elements in gaining financial assistance (European Commission 2006a). More than EUR 315 million were earmarked for Albania through CARDS between 2001 and 2006 (European Commission 2006b). As a result of the Community's reform of external aid, the CARDS programme will be replaced by the new Instrument for Pre-Accession Assistance (IPA) as of 2007. The major objective of the IPA is to streamline all pre-accession assistance into a single framework, and to unite both candidate and potential candidate countries under the same regulations. The instrument will consist of five components, the first two of which will also be open to potential candidate countries: The Transition Assistance and Institution Building component and the Cross-Border Co-operation component (European Commission 2006a).

In the last fifteen years, Albanian society has reached a remarkable unity regarding the concept of Euro-Atlantic integration. Political parties, intellectuals, business people and citizens all agree on the need to join the European Union. However, little research or public debate has been carried out regarding the technical implications of this endeavour, possibly due to the sensitivity of the topic. The complexity of the process remains largely opaque both to policy-makers and to society (AIIS 2006).

2 Contemporary Institutional Landscape

Albania has been undergoing radical changes and transitions since the dissolution of communism at the beginning of the 1990s. Although still comparatively isolated from international cooperative initiatives and lacking adequate

institutions and support structures, the main actors carrying out research and development projects are the Academy of Sciences and higher education institutions. Higher education and science are mostly treated separately, and PhD programmes are often disorganised. Further progress in the reorganisation of research institutes, the creation of national research centres, the introduction of standards and performance indicators, and the improvement of the infrastructure and legal framework are absolutely necessary (Dall 2006).

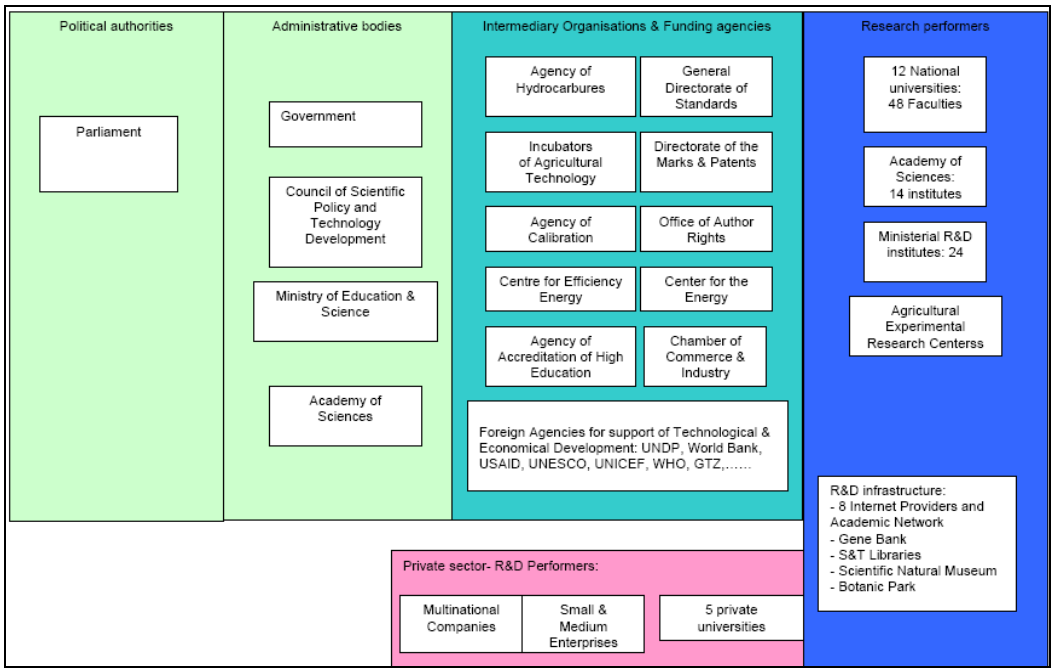
2.1 Main Stakeholders Involved in Policy Making in Albania

Most of the Albanian R&D performance is concentrated in the centres and institutes under the auspices of the ministries, the Academy of Sciences (ASA), higher education institutions and the government sector, which together account for about 97 % of R&D performance. In contrast, private sector R&D is marginal. There are no specific funds or agencies in Albania that are responsible for financing R&D activities – instead, a national competitive R&D programme operates on behalf of the ministry, and organises cooperative processes with the ASA and other research institutions concerning priority setting for the national programme (ICBSS 2006).

The main governmental body responsible for R&D activities and the general administration of Albanian national S&T programmes is the Ministry of Education and Science (MoES). The ministry's agenda is based on institutional and programme-based funding. It consults the government, aiming to act as an information point for the scientific community, and is responsible for bilateral agreements and other activities and actions. It also supports S&T programmes in other ministries. However, it must be noted that the responsible department is severely understaffed. With agriculture being one of the most important sectors in the economy, the Ministry of Agriculture and Food is one of the main players in formulating scientific research policy in the national Agriculture and Food programme. The following ministries (often with research institutions attached) can also be considered as important stakeholders in the Albanian national innovation system: the Ministry of Energy; the Ministry of Health; the Ministry of Culture, Youth and Sports; and the Ministry of Construction and Tourism. The Albanian government acknowledged the need to amend existing laws and at the end of 2005, a group of experts was set up with the aim of defining and carrying out necessary changes in the innovation systems, including the creation of a Council of Higher Education and Science. The Council for Scientific Policy and Technological Development, which was composed of seven ministers and eight scientists, no longer exists and so the following duties are under the responsibility of the Council of Higher Education and Science: defining and managing S&T policy, approving orientations and priorities, making recommendations on draft laws and draft decisions to be submitted for consideration and approval by the People's Assembly and the Council of Ministers, carrying out the periodic evaluation of the achievements of the S&T policy, etc. The Committee for Science and Technology, which is specified by the law but does not exist in practice'. Its main functions are performed by the Ministry of Education and Science itself, i.e. formulating S&T policy and national R&D programmes in order to implement this policy, drafting the budget proposal

for S&T activities, and holding and distributing funds (Agolli 2007; ICBSS 2006). In March 2006, a conference on the "Reform of the Albanian Higher Education System in the European Area" was co-organised by the Council of Europe and the Albanian Ministry of Education. It was the opening conference for the Albanian Master Plan for higher education. The Albanian government has made the educational reform one of its top priorities – this comprehensive reform is supposed to be achieved through the elaboration of a master plan. Developments and trends in higher education in Europe, in particular within the Bologna Process (Albania acceded to the Bologna Process in September 2003), will be an important element in implementing the master plan, and the Council of Europe will provide the international expertise (Council of Europe 2006). Far reaching reforms and the implementation of new laws should significantly contribute to the improvement of the existing situation in the field of higher education.

Figure 2.1: The Albanian STI-System. Source: International Centre for Black Sea Studies (ICBSS 2006)



Generally speaking, researchers in Albania are positioned in:

- research institutes/centres of the Academy of Sciences
- research institutes/centres, and scientific stations/incubators of ministries
- higher education institutions
- R&D units in the private sectors of industry
- NGO research institutes and research centres

The Academy of Sciences was founded in 1972 and represents the most prestigious and most important scientific institution in the Republic of Albania. The ASA is an independent institution, which includes about 14 scientific institutions/centres within its system (half of which belong to the natural and technical section and the other half to the section of human and social sciences). The publishing house "Shkenca" (Science) also plays an important role,

especially in the publication activities of the ASA. Over 270 researchers work in the academy and its institutions; they create clear research programmes, closely linked to the actual problems of development in the country, and formulate clear procedures for planning, controlling and evaluating scientific activity (ICBSS 2006).

In addition to the institutes of the Academy of Sciences, there are also 24 other research-study institutes under the authority of the ministries. Research institutes within the Ministry of Education and Science ought to present a balanced combination of R&D activities, fulfilling an important role in the provision of services and monitoring activities in specific fields. The transformation process from an institutional system, designed to function in a centralised economy, to a system that functions in a market-economy represents a constant challenge. Regarding the financial aspects, the majority of these institutions mainly rely on the state budget, with little secondary income. The main part of the budget is destined for wages, leaving little for the provision of infrastructure. Unfortunately, not all of these institutes meet the required standards and the financial situation does not allow for the renewal of equipment. The institutes are often fragmented and lack qualified personnel, as well as clear and well oriented programmes operating under market-economy conditions. Attempts by the Albanian government to reform these institutions are ongoing (ICBSS 2006).

In higher education institutions, the main R&D activities are carried out in Humanitarian, Economic, Social-juridical and Medical sciences, and partially in Natural and Technical sciences. They are mainly concentrated in the University of Tirana, the Polytechnic University of Tirana, the Agriculture University of Tirana, University of Vlora, the University of Shkodra, and partly in the University of Elbasan. The small share of R&D in the higher education sector is mainly due to the lack of direct financing. Hence, higher education institutions in Albania are mainly oriented towards teaching processes, while scientific research remains limited and is mainly possible through foreign cooperation initiatives (Agolli 2007; ICBSS 2006). The University of Tirana, which was originally composed of ten faculties, was split up in 1991 when the engineering faculties were brought together under the Polytechnic University, leaving the University of Tirana with seven faculties covering Human, Economic, Natural and Medical sciences.

Table 2.1: Main S&T Stakeholders in Albania (Dall 2006) and (Sulstarova 2006)

Main ministry in Albania competent for S&T:	- Ministry of Education and Science
Other ministries with importance to the S&T sector:	- Ministry of Agriculture and Food - Ministry of Energy - Ministry of Culture, Youth and Sports - Ministry of Health - Ministry of Construction and Tourism
Other important stakeholders:	- Council of Higher Education and Science - Rectors Conference - The Academy of Sciences
Universities:	- University of Tirana - Polytechnic University of Tirana - Agriculture University of Tirana

	- Military University of Tirana - University of Shkoder - University of Elbasan "Aleksander Xhuvani" - Agricultural University of Korce - University of Gjirokaster - Technological University of Vlore - University of Durres

Table 2.2: Number of Institutes and Scientists in Central S&T Institutions

Central Institutions		Number of Institutes	Number of Scientists
1	The Academy of Sciences	13	253
2	Ministry of Education and Science Universities	2 10	27 1208
3	Ministry of Agriculture and Food	14	144
4	Ministry of Industry and Energy	8	359
5	Ministry of Territory Arrangements and Tourism	4	202
6	Ministry of Culture, Youth and Sports	2	46
7	Ministry of Transportation	1	18
8	Ministry of Public Health	1	62
TOTAL		**55**	**2319**

The private sector's investment level in S&T in Albania is extremely low. SMEs, or rather micro-enterprises (entities with fewer than five employees), make up the vast majority of private businesses. Their survival strategy focuses on labour intensive, low-cost production. Against this background, R&D falls almost entirely under public responsibility (Xhepa, Mancellari 2003). Overall, there are very few private institutions, and these few operate mostly in the field of Human, Social and Political sciences but their personnel structures and their financial and cooperation procedures are not stable. However, in the field of information technology, the private sector became dominant by establishing market activities with some relevance to research and development (ICBSS 2006).
The Albanian state budget, the MoES national programmes, and international programmes remain the most important sources of funding for research.

2.2 International Cooperation

Albania has been experiencing continuous international cooperation and support, especially in the last five years. This cooperation has been substantially supported by many international organisations, as well as through the assistance of other countries in bilateral programmes (also providing significant benefits to the R&D sector). The largest part of the financial support in this respect came from the funds of the Stabilisation and Association Process, the CARDS programme, the Stability Pact for South Eastern Europe, the European Investment Bank, and the European Bank for Reconstruction and Development. The European Union's Tempus programme has been important in the area of

higher education, while Albania's participation in the Framework Programmes for R&D and gradual integration into the European Research Area (ERA), has also been of particular importance. Inclusion into the European Investment Bank's Innovation 2010 Initiative ought to prove useful as well. Regarding multilateral cooperation in the area of science and research, Albania has closely cooperated with many specialised United Nations (UN) agencies, such as UNESCO, UNIDO, UNDP and UNECE[1]. Some other international organisations, such as the World Bank, have also been important donors and have helped in the area of R&D (Uvalic 2006).

In addition, many regional projects have been launched with the objective of promoting regional cooperation within South Eastern Europe. Regional scientific cooperation in Albania is currently being promoted by several regional organisations: the Central European Initiative (CEI), the Adriatic-Ionian Initiative, the Stability Pact for South Eastern Europe, Black-Sea Economic Co-operation (BSEC), the International Atomic Energy Agency (IAEA) etc.
Regional networks also include initiatives to aid the participation of Western Balkan countries in the EU Framework Programmes for R&D, as defined by the EU-Balkan countries Action Plan on Science & Technology, adopted at the Ministerial Conference in Thessaloniki on June 26-27, 2003. The "Action Plan", along with the "Shared Vision", defined the priorities of research cooperation and provided a detailed examination of all possible sources of funding, thus contributing to the economic growth of Balkan countries and aiding their integration into the European Research and Innovation Area (CORDIS 2003).

Although the Albanian Ministry of Foreign Affairs (MFA) has certain responsibilities in the field of international co-operation, it is the Ministry of Education and Science (MoES) which has full autonomy and responsibility for international R&D co-operation, especially concerning negotiations with partners in S&T institutions, contracting the framework for international bilateral and multilateral S&T cooperation and financing those activities which are selected and approved by the ministry. The MoES is a member of the SEE-ERA.NET project (South-East European ERA-NET) – a networking project aimed at integrating the EU member states and the South Eastern European countries into the European Research Area by linking research activities within existing national, bilateral and regional RTD programmes. On the other hand, the Academy of Science (ASA) has full autonomy and responsibility regarding international R&D cooperation (in terms of negotiation with partners in international and national S&T institutions). It also has the right to negotiate with international organisations like the WMO (World Meteorological Organisation), the IAEA (International Atomic Energy Agency), the CTBTO (Comprehensive Nuclear-Test-Ban Treaty Organisation), the BSEC (Black Sea Economic Co-operation), UNESCO-ROSTE Venice etc., upon the permission of the Albanian Ministry of Foreign Affairs. (ICBSS 2006).

The Albanian Institute of Informatics and Applied Mathematics (INIMA), founded in 1986 continues to play a key role in international cooperation. Among numerous activities in the ICT field, the INIMA participates in various international scientific projects, such as TERENA (Trans European Research and Education Network Association), SEEREN (South Eastern European Research &

[1] Please see the List of Acronyms, chapter 9.

Education Network – partners being the Polytechnic University of Tirana and the Faculty of Economics of the University of Tirana), SEE-GRID (South Eastern European GRid-enabled e-Infrastructure Development), SEEFIRE (South-East Europe Fibre Infrastructure for Research and Education), ISOTEIA (Integrated System for the promotion of Territorial-Environmental Impact Assessment in the frame of spatial development) etc. (INIMA 2006).

Bilateral cooperation in Albania is based on competitive funding for joint research projects. The MoES supports these projects, the main goals of which are research, development and innovation based on the priorities of the national R&D programmes. Albania maintains bilateral inter-governmental cooperation in the area of R&D, mainly with Greece and Italy. Over 80 projects were agreed with Greece in S&T cooperation between 2001 and 2006, and over 100 have been co-developed with Italy between 2002 and 2004. The operative priorities of such international agreements include; cultural heritage, environment, health sciences, seismology, transport networks, telecommunications, public health, economy, technological innovation, agronomy, biotechnology etc. Furthermore, the negotiations for bilateral cooperation with the FYR of Macedonia, Slovenia, Austria and Turkey are ongoing (ICBSS 2006). With the FYR of Macedonia and Slovenia bilateral inter-governmental co-operation was running with six joint projects per country in 2006 (Agolli 2007). Albanian R&D institutions also participate in multilateral programmes – focussing especially on EU and UN programmes; but also national and regional (Balkan and Eastern Mediterranean region) programmes.

The joint UNESCO-HP project, "Piloting Solutions for Alleviating Brain Drain in South Eastern Europe", was launched in 2003 in order to help improve the devastating situation in the region caused by the massive emigration of skilled professionals and intellectual capacities. The project was created with the aim of improving scientific research and reducing brain-drain in South Eastern Europe, by providing grid computing technology to higher education institutions. The grid project was extended in April 2005 to include two new universities - the Polytechnic University of Tirana and the Ss. Cyril and Methodius University in Skopje. UNESCO's project aims to help turn "brain-drain" into "brain gain" by offering modern technological and financial facilities to young scientists from the region and encouraging them to cooperate with their fellow-nationals living abroad. The project will also help them identify international partnerships and funding opportunities, as well as addressing international developments of common interest, such as the Bologna process (UNESCO & Hewlett Packard 2003).

IS2WEB is a project co-ordinating the integration of scientists into the IST (Information Society Technologies) Programme of the FP6 and SEE-INNOVATION (focussing on the integration of SMEs in the field). The projects are funded by the European Commission and assist innovative research organisations and SMEs in Western Balkan countries in getting informed about, and actively participating in, IST research funded by the European Commission. Civet 2000, a private NGO is a partner of the IS2WEB project in Albania.

A group of Albanian academics and analysts with extensive experience on foreign policy and policy-making issues have established the Albanian Institute for

International Studies (AIIS), a non-governmental, non-profit making research and policy institute, which has become the leading think-tank supporting Albanian policy makers and international partners in the fields of security studies, democracy, Euro-Atlantic integration and regional cooperation. Regarding Euro-Atlantic integration, the AIIS undertakes research, organises international conferences, conducts broad-based projects and publishes its findings and recommendations. The institute's dedication to Albania's integration into NATO and the European Union will continue to be pragmatic and focused on the realities of integration, including efforts in dismantling false perceptions surrounding the integration issue. In 2005, the AIIS established an independent research centre (AIIS - Centre for European Studies), focusing on contemporary issues of the EU policy debate. The centre's mission is to facilitate and contribute to Albania's EU integration process by providing the relevant expertise and assistance to the policy-making community. Furthermore, in 2005 the institute also set up a European Programme. AIIS projects place emphasis on increasing public awareness and strengthening knowledge concerning the European integration process and the European Union; providing expertise and know-how to policy makers; strengthening Albania's capacities to face the challenges of the Stabilisation and Association Process (SAP), etc. The institute also publishes a monthly review called "EUROPA" – a contribution towards the "Europeanization" of Albanian society, emphasising the future challenges and opportunities presented by the SAP (AIIS 2006).

3 The Input Side of the National Innovation Systems

Regarding the input indicators for the S&T system, some questions (e.g. the amounts spent in terms of the gross domestic product (GDP), volumes, growth rates etc.) need to be addressed. Here a distinction is made between private and public investment. R&D investment can be considered as an indirect measure of a country's innovation capacity (Fischer 2006).

3.1 Development of Financial Resources Allocated to R&D

The National Statistical Office of Albania (INSTAT) has not yet released official statistics according to the standards of the OECD Frascati manual for R&D funding and performance. Government expenditures on R&D in Albania account for approximately 85 % of the expenditure of research institutions. The Ministry of Education and Science reported that total expenditure for research institutions in 2004 reached EUR 2.4 million. According to Eduard Sulstarova from the General Scientific Secretary of the Albanian Academy of Sciences, general expenditure on R&D (GERD) in 2003 in Albania reached only 0.18 % of the GDP. The financing of R&D activity is conducted through institutional funding by the government, programme financing through the MoES, programme financing on the framework of bilateral programmes, international collaboration etc. (Sulstarova 2006).

The substantial erosion in the standard of living experienced by Albanians as the economy adjusted to international market conditions was mainly due to the

radical changes that the country has undergone since 1992. The GDP showed negative growth rates between 1992 and 1994, although official figures now show positive growth rates of approximately 10 % per year, with a GDP of approximately USD 8.4 billion[2] in 2005, according to the World Development Indicators for World Bank (UNESCO/UNDP 1996).

The state budget finances R&D activities in Albania in two complementary ways: via funding institutions and via national R&D programmes. The institutional financing goes directly to central organisations in order to support the R&D activities of their dependent institutions. As for financing through R&D programmes, this is conducted using (ICBSS 2006) the state budget, which is designated for national R&D programmes (see chapter 5.3). It is used to finance different projects in the priority areas in a competitive way through the MoES, following established and standard procedures, especially for international cooperation

There is hardly any current data available on the private sector investment in S&T on which to draw substantive conclusions, but at the time of writing this report, the level was still very low. Despite its current difficulties and serious economical issues, some experts are rather optimistic about Albania's future development, especially taking its proximity to European markets and innovative abilities of its people into consideration.

3.2 R&D Infrastructure

There are currently three main elements in the Albanian national innovation system: government ministries, S&T institutes (each of which is associated with a ministry, except the Academy of Science) and the higher education sector. As Albanian industry develops, it will import technologies, initially associated with production equipment and processes, before adapting and developing its own technologies. In the public sector, foreign donors are major sources of finance for the purchase of technologies. Although many of the Albanian institutes run by government ministries describe themselves as research institutes, it appears that the bulk of their activities focus on scientific and technical services. Thus, the Albanian national system of innovation can be primarily defined as the S&T service system (as defined by UNESCO). Primary policy interest should consider S&T investment and measure S&T inputs and outputs (UNESCO/UNDP 1996). The infrastructure for disseminating information on innovation, technology and R&D matters in Albania is weak, so the institutions developing S&T activity have self-initiatively adopted infrastructures for the dissemination of information. There are also some private or non-profit making organisations offering and developing internet services (e.g. Adanet, Albaniaonline, ICC, StarSat, Abissnet, SUN etc.). The MoES and the ASA have jointly set up a procedure to establish the Albanian Academic Network (AAN). At the time of writing this report, the network was still in a preliminary phase and did not cover all the research institutions and centres, higher education institutions, and other important stakeholders for S&T sector in Albania. Gradually, LAN networks for every

[2] Around EUR 6.5 billion on November 21, 2006 (www.oanda.com/convert/classic)

institute/centre within the ASA system were created, and the internet services now work regularly (ICBSS 2006).

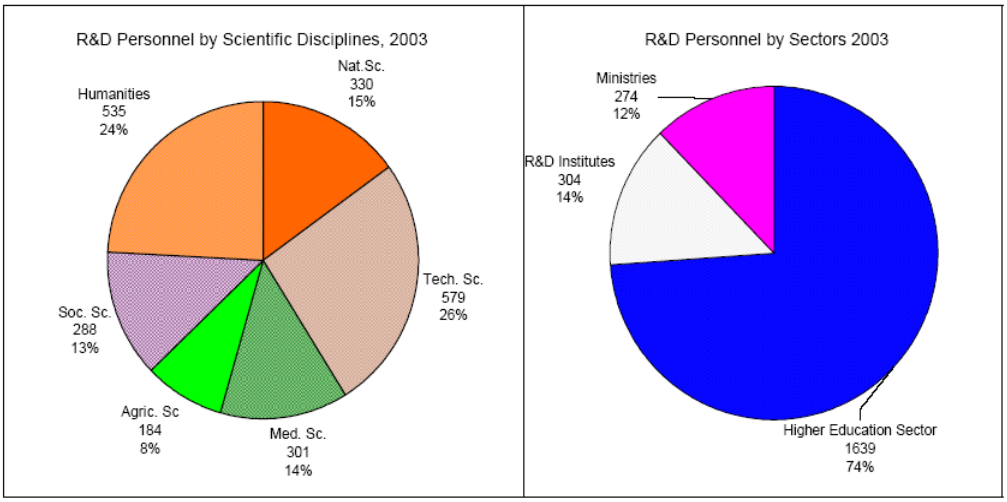
According to Uvalić, the overall state of R&D infrastructure in Albania is not very satisfactory. At the time of writing this report, there were still no research centres at the local or regional level, nor new technologies or innovation parks. The technology and technical research equipment has improved in recent years, but is still insufficient. The communication and information infrastructure, the network access for higher education and research institutes, and the library information systems are highly inadequate and there is almost no access to electronic journals and Science Citation Index databases (Uvalic 2006).

3.3 Human Resources in R&D

The human capital invested in a nation's S&T effort is as important as the financial resources devoted to the programme. The level of financial resources available for the national S&T programme usually sets the level of demand for human capital, but factors affecting the supply (such as university and technical school enrolments) are often unconnected to demand, leading to shortfalls or overabundance (UNESCO/UNDP 1996).

Most of the Albanian R&D performance is concentrated in ministerial institutes and centres, the Academy of Sciences, higher education institutions and the government sector, which together account for about 97 % of R&D performance. In contrast, the private sector R&D is marginal. With regard to public R&D, the Academy of Sciences accounts for the highest share of scientific activity. Official human resource statistics in Albania for R&D employees and researchers do not equate to Full Time Equivalents (FTE) as defined in the OECD's Frascati manual. In the higher education sector in particular, researchers are only partly engaged in R&D activities and from 1990 onwards the level of human resources engaged in S&T decreased drastically (ICBSS 2006).

Figure 3.1: R&D Personnel by Scientific Discipline and Sectors of Employment (2003) (ICBSS 2006)



Source: Academy of Sciences (ASA), Ministry of Education & Sciences (MOES), Agency of Accreditation of the High Education

The distribution of researchers by scientific discipline shows that almost 40 % of researchers in Albania are found in Natural and Technical sciences, 14 % in Medical sciences and around 8 % in Agricultural sciences. Scientific personnel are numerous in higher education institutions, although they make little contribution to the R&D sector, highlighting the urgent need for changes in the research system. Research personnel from the Natural and Technical sciences, Medical sciences, Agricultural sciences, Social sciences and Humanities contributed to the shift of researchers from research institutes to the higher education sector, taking employment as the external staff of the public and private education sector (over 1,800 persons in the last decade). Around 120 scientists from the Academy of Sciences contribute to the country's higher education institutions. Generally, the quality of the science system is considered much higher than the level of the economy would suggest. One reason for this can be found in the sufficient supply of human capital, which exists despite the severe brain-drain problems. Although the level of higher education has decreased and facilities have not yet been modernised, the education system seems to be capable of supplying a sufficiently large base of scientists to keep up the status of the science sector. However, there are severe difficulties in providing highly qualified graduates on a broad basis. Moreover, the ongoing process of emigration of the most highly educated people poses additional threats for the human capital basis (ICBSS 2006).

Various surveys have shown that approximately 40 % of professors and research scientists from the higher education institutions and science institutions in the country emigrated between 1990 and 1999. Furthermore, this exodus seems to be increasing, with even more highly educated people wanting to emigrate as shown by a 1998 survey. Another survey (1999) revealed that 67 % of 300 academics, who had obtained PhDs in the West during the 1980s and 1990s, had emigrated. The emigration of the highly educated elite began with the implementation of economic reforms, which resulted in hardship for the population and, above all, a reduction of real wages. Emigrants include highly educated and qualified people from all industrial sectors and scientific disciplines, mostly young males: 51 % of emigrants are under 40 years old and 67 % of

them are male. However, many of the highly educated people who have gone abroad do not work in their area of specialisation, creating a considerable level of "brain-waste". For example, data from the 1998 survey reveal that about 74 % of Albanians in Greece do not work in their previous area of activity. In Italy, this figure drops to 67 %, in Austria to 58 % and in the USA to 70 %. After the collapse of communism, thousands of young people left the country to study abroad – this contingent of Albanian society, which is exposed to Western methodology and practice, especially in the field of science, is in a position to revitalise Albanian institutions and provide fresh impetus into social, economical and political life. However, the continuous brain-drain which is driven by the deteriorated economic living conditions, the lack of state-of-the-art infrastructure and funding (constituting serious obstacles for research) and restrictive visa regulations (hindering scientific exchange and temporary employment abroad) poses a severe threat to the Albanian social system (ICBSS 2006).

However, despite the aforementioned difficulties caused by brain-drain throughout the 1990s, the number of R&D personnel gradually started to increase in 1996, and an upward trend has been present in practically all scientific disciplines ever since (see Table 4.1). Similarly, there was an increase in the number of doctors in R&D between 1996 and 2003, the increase being particularly marked in scientific fields such as Engineering, Medical science, and Social science (see Table 4.2).[3] The importance of young researchers in R&D has also increased in practically all scientific disciplines, but the most numerous, are young researchers in medical science (more than 50 % of the total) (see Table 3.3). The number of professors and assistant professors has also increased, again in all disciplines (see Table 3.4).

Table 3.1: R&D Personnel (data is valid for the Higher Education sector) (Uvalic 2006)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Natural sciences, mathematics	20	25	27	30	32	34	35	37
Technical sciences	23	24	27	30	34	34	36	38
Medical sciences	45	48	48	50	53	55	57	60
Social sciences	31	34	36	38	39	39	40	42
Humanistic sciences	45	46	47	50	53	57	60	62
Total	**164**	**177**	**185**	**195**	**211**	**219**	**228**	**239**

Table 3.2: Number of Doctors in R&D by Scientific Field (data is valid for the Higher Education sector) (Uvalic 2006)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Natural science	72	77	76	86	91	96	100	105

[3]The figures in the tables below are not directly comparable, since some refer to part-time and others to full-time work.

Engineering	26	31	33	37	39	42	46	50
Medical science	27	30	34	38	41	45	49	51
Social science	16	19	22	25	28	31	33	36
Humanities	21	23	25	28	30	32	34	35
Total	**162**	**180**	**190**	**214**	**229**	**246**	**262**	**277**

Table 3.3: Number of Young Researchers in R&D by Scientific Fields (data is valid for the Higher Education sector) (Uvalic 2006)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Natural science	15	18	21	24	26	29	31	33
Engineering	12	13	13	14	14	15	15	17
Medical science	100	107	109	111	114	116	118	119
Social science	14	15	15	15	16	16	18	19
Humanities	13	14	14	16	17	17	18	18
Total	**154**	**167**	**172**	**180**	**187**	**193**	**200**	**206**

Table 3.4: Number of Professors and Assistant Professors, by Scientific Field (data is valid for the Higher Education sector) (Uvalic 2006)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Natural science	54	62	66	70	73	79	86	92
Engineering	26	29	31	33	36	38	39	41
Medical science	52	56	59	65	69	75	80	88
Social science	13	15	17	19	23	28	31	36
Humanities	52	59	65	69	77	79	85	91
Total	**197**	**221**	**230**	**256**	**278**	**299**	**321**	**348**

4 The Output Side of the National Innovation Systems

The output of an innovation system is manifested through the new knowledge, new products and processes which are produced. Indicators such as the 'Gross Expenditure on Research and Development' and the 'Number of Researchers' provide a measure of the resources potentially allocated to innovation. This chapter focuses on the results of the innovation processes and their output indicators.

4.1 Patenting Activities in Albania

Among other approaches, innovative output can be measured by patent data, the most important advantage of which is the wealth of the information supplied. A patent file granted by the European Patent Office (EPO) provides data on the invention, which is protected by the patent through the title, abstract and technological classification. Furthermore, patent data provide the only output measure available for almost all countries in the world, including Albania (Hörlesberger 2006).

European inventors today have a choice between two alternatives when seeking patent protection for their inventions: the European Patent Office (EPO) and national patent offices. The EPO was set up to provide patent protection through a single procedure, defining the granting of patents in some or all of the contracting states of the European Patent Convention (EPC). The procedure for obtaining a patent at the EPO consists of two phases and sometimes a third phase dealing with the possible objections. In contrast to national patents that are valid in only one country, a European patent gives its proprietor equivalent rights to a national patent in each member state. Moreover, European patents may also be effective in some countries, including Albania, that have not yet acceded to the EPC (European Patent Office 2006).

A second barrier to patenting is the cost associated with a patent application. Studies estimate that the cost of an application and the 10-year maintenance of a patent at the EPO is approximately EUR 32,000 (Roland Berger Market Research 2004). In contrast, applications to national patent offices may be less expensive (applications to local patent offices in the Western Balkans in particular are expected to incur a considerably lower cost than an application to the EPO) (Hörlesberger 2006).

In Albania, there is no national patent office. Thus, administration of industrial property is instead carried out by the Directorate of Patents and Trademarks (ALPTO) under the authority of the Ministry of Economy, Trade and Energy (since May 2006), while the copyright offices are under the authority of the Ministry of Tourism, Culture, Youth and Sports. The reform of Intellectual Property (IP) legislation in the late 1990s represented a significant step to harmonise Albania's laws with the international IP system (see chapter 6.1 (table 6.1) for details on the Albanian legislative framework in the IP sector) (SD Petosevic 2006).

In the 1990s, Albania joined important international treaties, agreements and conventions regarding intellectual property, including the Madrid Agreement (1995), the Paris Convention (1995), the Patent Co-operation Treaty (1995), the Protocol Relating to the Madrid Agreement (2003), the Berne Convention (1994) and others. Albania is also a member of the WTO (a member and signatory of the TRIPS - Trade-Related Aspects of Intellectual Property Rights Agreement - in 2000), WIPO (World Intellectual Property Organisation), and has held "extension state" status with the EPO (European Patent Office) since 1996 (this means that the state recognises European Patents, although it is not yet formally a member of the organisation) (SD Petosevic 2006). According to the latest WIPO report, there was an overall 5.3 % increase in the number of the international patent applications filed in 2004 (with respect to the year 2003). However, with only one patent application filed (less than 0.1 % of all patent applications filed at WIPO in 2004), Albania is amongst the countries with the poorest level of international patenting activity (WIPO 2006).

The procedure for registering a trademark in Albania is similar to the procedure in most jurisdictions – once registered, the registration is valid for 10 years and is renewable. In 2005, with the growth of the local economy in Albania, trademark registrations by foreign companies rose to 800, which signifies that the macro-economy in Albania has stabilised and is growing rapidly (SD

Petosevic 2006). As mentioned above, European patents may be extended to Albania as a result of the agreement between the EPO and the ALPTO – i.e. a European patent which has been extended to Albania receives the same level of protection as an Albanian national patent.

Table 4.1: Patenting in Albania 1996-2003 (ICBSS 2006)

	1996	2000	2003
National applications	6	26	96
Others	47	154	834

Table 4.2: Applications Filed and/or Registered in 2000 (WIPO 2006)

		Patents	Trademarks	Industrial Designs
Applications by	Residents	4		1
	Non-Residents	221		12
Grants to	Residents	4		1
	Non-Residents	186		10

Table 4.3: International Registrations – Madrid System, 2002 (WIPO 2006)

Total applications	1,758
Total registrations	1,758

4.2 Publication Activity in Albania

The scientific work carried out by the Albanian Academy of Science and other research institutes is published in the academy's publishing house "Shkenca". Various scientific studies in the form of monographic and periodic volumes are produced in this publishing house, thus offering qualitative work to the public on a continuous basis. Albanians abroad (especially in Kosovo/UNMIK, FYR of Macedonia and Italy) also play a role in these publications. The principal aim of "Shkenca" is to publish studies in the field of Albanology - linguistic, historical, ethnological, folkloric, archaeological and other fields of scientific research. "Shkenca" is also a part of the C.E.E.O.L. (Central and Eastern European Online Library) – an on-line archive, which provides access to full text articles from 255 humanities and social science journals, electronic books and re-digitised documents pertaining to Central, Eastern and South-Eastern European topics. The C.E.E.O.L. is the result of 10 years of work by the Frankfurt Eastern/Western European Cultural Centre, Palais Jalta and intends to provide an on-line library and a document shop. Its content is provided by numerous publishers and editors, mainly from Central and Western European countries, which deal with Eastern Europe in terms of its history, languages and literature, along with its cultural, social and political realities. The C.E.E.O.L's scope is to provide a closer alliance between the people of Europe, based on shared values, while taking full account of the national and regional identities, cultures and values in the context of the EU's enlargement (C.E.E.O.L. 2006).

5 National R&D Strategy and Legal Framework

The societies of the South Eastern European region have all been going through radical changes and transitions since 1989, although from significantly different starting points. For instance, the comparatively open system of the former Socialist Federative Republic of Yugoslavia (SFRY) was of relatively good quality, despite the uneven distribution and damage caused by the war of the 1990s, while the Albanian system on the other hand, was significantly more closed and thus differed substantially from that of the former SFRY (Dall 2006). Most S&T policies in the Western Balkans region are characterised by their encouragement of sustainable support for basic research at higher education institutions and research institutes, for the development of human resources and for cooperation inside the framework of the European Union's programmes for RTD and joint research programmes with the European Science Foundation or bilateral agreements (Dall 2006).

In technology policy, emphasis is placed on linking research institutions as sources of knowledge with industry and SMEs, as well as encouraging the establishment and functioning of intermediary institutions (Kobal 2005).

5.1 Legal Framework for National R&D System

A legal framework is indispensable in the organisation of R&D institutes, the innovation infrastructure and programmes that provide grants to research organisations and innovative companies. Most commonly, laws are prepared separately for the areas of S&T and higher education. The Albanian system of higher education is still affected by the new Law on Higher Education (2003), which enhanced the scope for autonomy of higher education institutions, institutionalised the Rectors Conference as a major consulting body, set up a new accreditation system, changed admission criteria, promoted the adoption of the European Credit Transfer System (ECTS), etc. Legislative priorities are determined by the requirements of the Bologna Declaration (signed by the Albanian government in September 2003) and not by the needs of scientific research. The Law on Science and Technological Development sets the objectives of S&T policy, which include stimulating the global integration of Albania's national R&D activity and encouraging privatisation of S&T activities. It also defines the procedures for S&T policy development (Dall 2006).

Table 5.1: Important laws in the legal S&T framework of Albania (Agolli 2007; Dall 2006)

Law on Higher Education and Science (forthcoming)	Albania is currently in the process of drafting a new law on Higher Education and Science and was ready to approve it at the time of the last update of this report (Jan. 2007) (Agolli 2007).

Law on Science and Technological Development (1994), amended in 1998	Sets out the objectives of S&T policy, which include stimulating the global integration of national R&D and encouraging privatisation; expounds the procedures of S&T policy development. The main functions of the Committee for Science and Technology are currently performed by the Ministry of Education and Science, with a very limited number of people now working on it, i.e. formulating S&T policy and national R&D programmes in order to implement this policy.(Agolli 2007)
Law on Higher Education (1999)	Mentions scientific research as one of the tasks for tertiary education.
Law and Statute of the Academy of Sciences (2004)	
Law No. 7819 on Industrial Property (1994), amended by Law No. 8477 (1999)	Regulates industrial property, trade marks and industrial designs (these fields are also partly regulated by the Penal Code, Civil Code, Penal Procedure Code, Civil Procedure Code and Customs Code Law No. 8449 (1999).
Law on Copyright No. 7564 (1992), amended by Law No. 7923 (1995), Law No. 8594 (April 2000) and Law No. 8630 (July 2000).	Regulate copyright and related rights (those fields are also partially regulated by the Council of Ministers' decision Act No. 309 (2000) on "User's Tariffs", as well as in parts of the Penal Code, Civil Code, Penal Procedure Code and Civil Procedure Code.

5.2 Main Documents Reflecting National Innovation Strategies

Poverty reduction and economic development are considered to be the highest priorities on the Albanian policy agenda. However, the main strategy and key planning documents used by the Albanian government are of a rather general nature. The integration of the Stabilisation and Association Agreement with the European Union, the "UN Millennium Development Goals" (which do not focus on science) and the "National Strategy for Socio-Economic Development" are relevant strategies to be put into practice. The "National Government Action Plan" is the steering instrument which aggregates sectoral government action plans and consolidates the main policies. It aims to provide an overview, although the harmonisation of strategies is insufficient and the prioritisation of goals still remains unclear (UNDP Albania 2005). To date, neither science nor research have been mentioned as a top national priority (prioritisation has mainly focussed on health and education).
Nevertheless, the new Albanian government has established this area as a priority for the first time and far-reaching reforms are expected. A master plan for political development has been set up, including institutional and legal reforms. First and foremost, the aim is to improve the integration of higher education into the science framework. The master plan, which is designed to define the strategic direction and process of change for the future of higher

education in Albania between 2006 and 2016 has been drafted and was in the consultation process during the last update of this report. Once agreed, it will form the basis of an action plan. The draft master plan also talks about the implementation of an intermediary body, a "Research Strategy Group" which will develop a national research strategy and rationalise research capacity. The forthcoming national research strategy will select the areas in which research efforts are to be concentrated and provide a basis for rationalising the integration of the research institutions. The draft also states that academic research will be funded selectively on a project basis and through competition. This is foreseen mainly for the universities in Tirana. On the other hand, some small 'base line' funding for all universities will be provided to allow the development of one or two research specialisms (Agolli 2007; Draft Master Plan for Higher Education 2006). The encouragement of young researchers, excellence, mobility and the research infrastructure are key aspects of research development. Furthermore, numerous bilateral agreements have been signed and Albania's integration into the SEE-ERA.NET project and joint calls in 2006 promotes further internationalisation of Albanian research. The "National Strategy for Socio-Economic Development" (2001) has suggested, among many other measures, the harmonisation of the activities of research institutions with the requirements of industry and agriculture, the establishment of a national centre for agricultural scientific research and the promotion of applied research in accordance with the needs of farmers (Council of Ministers of Republic of Albania 2001). The Progress Report on the implementation of the "National Strategy for Socio-Economic Development" during 2003, "Objectives and Long Term Vision" and "Priority Action Plan 2004-2007" of April 2004, point out that the process of creating a "National R&D Programme" has already begun for some of the main areas. Furthermore, the definition of standards for scientific research is included in the mid-term plan of the Ministry of Education and Science, with a deadline specified for 2007. The "National Education Strategy 2004-2015" provides a roadmap intended to help strengthen the sector's performance and to improve the learning outcomes and efficiency of the system. In addition, the "Strategy on Employment and Vocational Training" (Ministry of Labour and Social Affairs of the Republic of Albania 2003) deals with instruments that contribute to the enhancement of innovation. The job creation target is focused on small and medium sized enterprises and on encouraging direct foreign investment. Although the term *innovation* has not been used, the "*development and strengthening of competition in the market through production of more competitive goods, transfer of new technologies and know-how*" (Ministry of Labour and Social Affairs of the Republic of Albania 2003) is one of the principal aims in supporting SMEs. The "Rural Development Strategy" (World Bank 2002) and the "Mid-Term Programme for Integrated Rural Development" (2004-2007) also deal with the strengthening of R&D as a major area of importance. The "Action Plan for the Implementation of European Partnership Priorities" (Council of Ministers of Republic of Albania 2004) discusses legislative and institutional measures focusing on agricultural research, such as setting up a single Agency for Agricultural Research and Extension. Another important document is the "National Information and Communication Technologies Strategy" (Republic of Albania 2003), approved in April 2003, which highlights research in ICT as a part of one goal, as well as the implementation of ICT education in Albanian higher education institutions and academic networks (Dall 2006).

5.3 Main Fields of Intervention and Research Priorities

Innovation policy as such has only recently re-emerged in the Western Balkan countries, after having been reduced to a secondary role during the transition process. According to Radošević, innovation policies in the region of the Western Balkans should recognise the structural weaknesses of their individual innovation systems and apply country-specific solutions, as opposed to the rather imitative mode that has so far prevailed (Radosevic 2005). Investment in R&D and high-tech orientation are regarded as the dominant paradigm in innovation policy (Dall 2006).

Serious long-term structural problems that affect the S&T sector need to be discussed in order to assure further development. Amongst these structural problems are budgetary constraints and public debt, a generally low level of development, widespread unemployment, poverty and massive migrations, pointing to the need for industrial restructuring in largely agricultural, de-industrialised economies (Uvalic 2005). Due to the overall lack of resources, prioritisation is of utmost importance, research orientation needs to be steered towards the economic and social needs of the present in order to make provision for the future. International programmes need to support foresight studies and the process prioritisation, as simply focusing on the RTD Framework Programme or imitating the strategies of other countries will not bring the desired results (Uvalic 2006). The draft master plan for higher education also raises several current concerns, such as the inhomogeneity of the system on the institutional level, the insufficient level of university autonomy which shall be increased, as well as ensuring external and internal accountability and better management (Draft Master Plan for Higher Education 2006).
Priority setting in the S&T sector is intended to facilitate efficient performance of certain identified S&T fields by providing a predictable allocation of critical-size funds. The need to define thematic S&T disciplines and fields has been recognised by all countries. Generally, the research priorities in the region are Information and Communication Technologies, Life sciences, research on Agribusiness and Biotechnology, Genomic research, Environmental and Materials research, and research on renewable energies and sustainable development as well as water management, transport, aerospace research, humanities and social sciences, and research in SMEs, although the level of specification varies from country to country. A great deal has been achieved in terms of institution and strategy development. In general, however, some papers remain superficial and many statements have more to do with paying lip service than real policy implementation and related operations. The level of aggregation seems too broad and thus, goal-oriented interventions will be difficult to identify and are unlikely to generate the expected benefit. Much remains to be done, including the implementation of national foresight studies in order to support the prioritisation process. It would also be worth considering a complementary comparative regional foresight exercise to assist the diverse national attempts (Uvalic 2006).

Table 5.2: Thematic Priorities in Albania (Ministry of Education and Science of the Republic of Albania 2005 for (Dall 2006))

Selected National R&D	• Albanological and Humanity Studies

Programmes for the period from 2003 – 2005	• Agriculture and Food • IST • Public Health • Natural Resources • Biotechnology and Biodiversity

Albania still needs to focus on institutional development. Long-term objectives include both transforming the education and research network into an innovation system, and developing structures, competences and capacities in order to properly evaluate and monitor scientific projects, including transparent recruitment policies and payment systems. Further actions for change include reorganising research institutes and creating national research centres, improving the infrastructure and introducing statistical standards. The focus is also on international and regional cooperation in bilateral agreements, regional actions, and European and international RTD programmes (Ministry of Education and Science of the Republic of Albania 2004). In general, tasks that will positively influence the national innovation system include improving and completing the legal framework and working conditions for public administration, fighting corruption, and implementing and enforcing laws. Priority tasks according to the government include improving the scientific output, protecting and developing national interests, combining research and higher education, observing intellectual property rights and participating in international S&T co-operation (Ministry of Education and Science of the Republic of Albania 2005). Nevertheless, these elements are hardly quantified with measurable indicators, and to date have not been properly programmed, monitored or evaluated (UNDP 2005).

Higher education and research receive little support from the donor community, although some attention is being paid to improving ICT networks and technical infrastructure. Shortcomings in the institutions themselves and the organisation of R&D can be identified as following (ICBSS 2006):

- an absence of any institutional organisation with programmes and projects of wide interest;
- a lack of ongoing scientific activities (e.g. conferences, journal production etc.) in many sub-structures of institutions;
- modest implementation and usage of the national R&D programmes;
- considerable part of the qualified staff co-operates outside the institutional structures.

S&T policy is mainly focused on applied research. Until 1999, there were fifteen priorities on the agenda; a policy which is now being criticised by the ministry, which says "*everything is a priority = nothing is a priority*" (Ministry of Education and Science of the Republic of Albania 2004).

A series of positive elements have been registered in the last years regarding the R&D strategy activities. However, these elements alone cannot compensate the need for a comprehensive intervention, studied, accepted and realised on the basis of new principles. In summary, the main positive developments are listed below (ICBSS 2006):

- A systematic change in science funding was adopted through the introduction of national programs with three-year cycles and a considerable reduction in the number of priority fields. Until 1995, priority

fields changed each year, and thus, the meaning of 'priority' was lost, because each field was financed in such a modest way (the annual fund is EUR 410,000).

- The internal integration effort was increased: the MoES adopted the concept of mixed scientific groups within the applications for national programmes and international projects, thus eliminating the risk of parallel development and duplicated efforts, while at the same time stimulating cooperation between different institutions and groups.
- A more active participation in international programmes and the projects of the scientific community in the country took place.
- There was a shift to standardise practices in R&D policy delivery - the whole procedure for national programmes was adopted according to the European standards.
- Since 1999, balanced bilateral agreements were reached, even financial ones, based on the international criteria of evaluation. In the realisation of the "Protocols of Co-operation", under the responsibility of the MoES, the same procedure is applied, with the same basic documents and in a synchronous way in both countries, according to the bottom-up principle.
- In the last few years, a slight increase in financial support, especially institutional funding, was achieved. The Academy of Sciences was one of the main profiteers.
- Successful interventions occurred in the improvement of infrastructure. The MoES supported the establishment of modern computer networks in five universities.
- An increase in cooperative initiatives concerning applications of scientific-technological products (between the ASA, higher education institutions and institutions of the ministries) in the private sector was manifested.
- The MoES is also becoming active in a series of regional initiatives and, bilateral scientific relations were extended to the FYR of Macdonia and Slovenia (6 joint bilateral inter-governmental cooperation projects within each country were running in 2006).

In 2005, financial support was provided at a percentage of 50 % to research institutes and 50 % to universities. In 2006, it was 35 % for research institutes and 65 % for universities (Agolli 2007).

National R&D Programmes (NRDP) receive financial sources from the state budget's R&D 'bottom-up' initiatives. The compilation of each NRDP programme describes the main development objectives of the priority fields. The NRDPs are prepared by a group of experts and approved according to the standard rules used by the Council of Higher Education and Science. The MoES is responsible for the implementation and complete financing of the project (programmes are implemented through projects, with a duration of three years). Six national R&D programmes were implemented between 2003 and 2005 (see Table 6.1). A competitive system is used to allocate financial support in the region of USD 1 million to 45 projects (in the decade between 1995 and 2005, over 100 projects were implemented in various priority areas, with financial support of around USD 3.5 million) (Agolli 2007; ICBSS 2006).

Further problems and shortcomings need to be addressed in near future in order to improve the existing institutional capacity in Albania (ICBSS 2006):

- the legislative base and administrative links leave much to be desired;
- the actual supporting infrastructure is insufficient and has limited competence;
- the system of research institutions is dispersed, with many small and unnecessary units;
- in many cases the development policy for research institutions continues to demonstrate a lack of adaptation to the new economic situation;
- the level of research in higher education institutions is not at the proper level;
- there are no quality and quantity standards for evaluating the institutions and scientific work;
- the cooperation between the different units inside the country continues to be limited;
- the basic infrastructure is of a low level;
- the information for respective scientific communities outside the country is missing;
- international integration is still low;
- studies conducted in the past have a low practical impact

6 Summary and Draft Conclusion

South Eastern Europe cannot be viewed as a homogenous area, although most of the countries in the region are challenged by similar issues, albeit of very different degree. The underdevelopment of S&T governance in Albania is among important structural problems requiring urgent attention. Although a variety of formal and informal institutions, mechanisms and procedures for managing S&T infrastructure are in place, there is a clear inconsistency between the functions described in the legislative framework and their actual implementation. Albania clearly needs to continue its efforts in developing a sustainable strategy, also taking regional and European dimensions into account. Foresight and the identification of innovation capacities will help to develop policies and a long-term strategy in a regional context. A high level of awareness among the public and politicians about the relevance of RTD and the need for a dialogue between the economy, academia and administration will provide the basis for developing a science policy that is in line with economic policies and priorities (Dall 2006).

R&D was one of the system elements most negatively affected during the transition and crisis period of the last 15 years. The research budget of Albania is still bellow the threshold level, while modernisation of the institutional and structural set-up of the national innovation system is long overdue. Links to other subsystems, such as education, the regional economy, and the financial and banking system, are generally still underdeveloped. Systemic problems which negatively affect the research and innovation systems in the country are mostly a result of overdue reforms of the S&T policy and RTD structures. The legislative system is characterised by a disruptive S&T policy formulation process, an overall low status of S&T in governmental policy priorities, a weak policy delivery system in terms of institutional structures and capacities, a lack of sufficient public and private funding for RTD, the generation renewal and the brain-drain problem etc. Other problems include the need to revitalise RTD

activities (in terms of increasing the demand for RTD results in industry, addressing the imbalance between basic, interdisciplinary and applied research, improving the knowledge base in technical disciplines and redeveloping the physical RTD infrastructure) and internationalise RTD activities. However, in comparison with other developing regions, South Eastern Europe still has a fairly sound human capital basis. Its absorptive capacity is central for learning, assimilating and using the knowledge developed elsewhere. At the same time, the relative losses in quality at all levels of the education system are worrying (Schuch 2006). The establishment of the group of experts at the end of 2005 and the preparation of the law on Higher Education and Science, which is ready to be approved, are important steps forward (Agolli 2007).

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8 List of Acronyms

AAN - Albanian Academic Network
AIIS - Albanian Institute for International Studies
ALPTO - Albanian Directorate of Patents and Trademarks
ASA - Albanian Academy of Sciences
BERD - Business Expenditure on R&D
BSEC - Black-Sea Economic Co-operation
CARDS - Community Assistance for Reconstruction, Development and Stabilisation
C.E.E.O.L. - Central and Eastern European Online Library
CEI - Central European Initiative
CORDIS - Community Research & Development Information Service
CTBTO - Comprehensive Nuclear-Test-Ban Treaty Organisation
EC - European Commission
ECTS - European Credit Transfer System
EPC - European Patent Convention
EPO - European Patent Office
ERA - European Research Area
ERA-NET - European Research Area Network
EU - European Union
EUR - Euro (currency)
FP5, FP6, FP7 - European Community Framework Programmes for Research and Technological Development
FTE - Full Time Equivalent
FYROM / FYR of Macedonia - Former Yugoslav Republic of Macedonia
GERD - General Expenditure on R&D
GOVERD - Government Expenditure on R&D
GDP - Gross domestic product
HERD - Higher Education Expenditure on R&D
HP - Hewlett Packard
IAEA - International Atomic Energy Agency
ICBSS - International Centre for Black Sea Studies

ICT – Information and Communication Technologies (also: one of the priorities in the Cooperation Programme of FP7)

INIMA - Albanian Institute of Informatics and Applied Mathematics

INSTAT - National Statistical Office of Albania

IP - Intellectual Property

IPA - Instrument for Pre-Accession Assistance

IS2WEB – FP6 project "Extending Information Society Networks to the Western Balkan Region"

ISOTEIA - Integrated System for the promotion of Territorial-Environmental Impact Assessment in the frame of spatial development

IST - Information Society Technologies (also: one of the priorities in FP6)

MFA - Ministry of Foreign Affairs

MoES - Ministry of Education and Science of Albania

NATO - North Atlantic Treaty Organisation

NGO - Non Governmental Organisation

NRDP - National R&D Programmes

NSSED - National Strategy for Socio-economic Development

OECD - Organisation for Economic Co-operation and Development

R&D - Research and Development

RTD - Research and Technological Development

SAA - Stabilisation and Association Agreement

SAP - Stabilisation and Association Process

SEE-ERA.NET - South-East European ERA-NET

SEEFIRE - South-East Europe Fibre Infrastructure for Research and Education

SEE-GRID - South Eastern European GRid-enabled e-Infrastructure Development

SEEREN - South Eastern European Research & Education Network

SFRY - Socialist Federative Republic of Yugoslavia

SMEs - Small and medium size enterprises

S&T - Science and Technology

TERENA - Trans European Research and Education Network Association

TRIPS - Trade-Related Aspects of Intellectual Property Rights

UN - United Nations

UNDP - United Nations Development Programme

UNECE - United Nations Economic Commission for Europe

UNESCO - United Nations Educational, Scientific and Cultural Organisation

UNIDO - United Nations Industrial Development Organisation

USA - United States of America

USD - US Dollar (currency)

WIPO - World Intellectual Property Organisation

WMO - World Meteorological Organisation

The Project

The Information Office of the Steering Platform on Research for Western Balkan Countries (***see-science.eu***) acts as a source of high quality targeted information on research in the Western Balkan countries (WBCs) by supporting the Steering Platform through a regular eJournal, analytical studies and reports and directories.
The Information Office contributes to a dialogue on S&T issues between the EU and the Western Balkan countries and the integration of the research and innovation systems of the WBCs into the European Research Area (ERA).
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Reviews and Contributions

The readers are invited to contribute to the development of the report. It is planned to update it on a continuous basis and to publish the results in a book in the end of 2007. Please send your remarks to Ms. Elke Dall at dall@zsi.at